300100

Set – D

JADAVPUR UNIVERSITY

POST GRADUATE ENTRANCE TEST 2022

ECONOMICS

General Instructions

- Candidates must show their Admit Cards on demand.
- Candidates are not allowed to carry mobile phone and / or digital watch inside the examination hall.
- Only Scientific Calculators non-programming can be used for the purpose of calculations.
- This question paper booklet contains 50 questions and candidates are required to answer all of those.
- All questions carry equal marks.
- All questions are of objective type having four answer options for each.
- Darken the Circle only for the last five digit of your Roll No. on the OMR Answer sheet
- There is only one correct option for every multiple choice question (MCQ). Marks will not be awarded for answering more than one option.
- A right answer will carry **01** mark and **0.25** mark will be deducted for a wrong answer.
- Questions must be answered on the OMR sheet by darkening the appropriate bubble marked A, B, C or D.
- Use only **black ballpoint pen** to mark the answer by completely filling the respective bubble.
- Write question booklet number and your roll number carefully in the specified locations of the OMR answer sheet.
- Rough work must be done on the question paper itself. Additional blank pages are given in the question paper booklet for rough work.
- Handover the OMR Answersheet alongwith QB to the invigilator before leaving the examination hall.
- This paper contains questions in English only.
- The OMR answer sheet is liable to become invalid if there is any mistake in filling the correct bubbles for question booklet number / roll number or if there is any discrepancy in the name/signature of the candidate. The OMR answer sheet may also become invalid due to folding or putting stray marks on it or any damage to it. The consequence of such invalidation due to incorrect marking or careless handling by the candidate will be sole responsibility of the candidate.
- No candidate shall be allowed to leave the Hall till after one hour of commencement of the Examination.
- Candidate found taking an unfair means are liable to be expelled from the examination Hall and all the papers in which (s) he has already appeared are liable to be rejected.

MA Economics Entrance Examination 2022

1. Consider a production process in which labour is the only variable input. What can we say about the shape of the marginal cost curve if the marginal product of labour is decreasing in the amount of labor employed?

(a) It is increasing
(b) It is decreasing
(c) It is a horizontal line
(d) It has an inverted U shape

2. Let blue pencils be perfect substitutes for red pencils. If M is the amount allocated for the purchase of pencils, of which there are only two types (blue and red), when will the consumer definitely spend the entire amount M on blue pencils?

(a) Price of red pencils exceeds the price of blue pencils
(b) Price of blue pencils exceeds the price of red pencils
(c) Price of red pencils equals the price of blue pencils
(d) Price of red pencils is Rs. 50 each

3. Consider a firm with marginal cost of $2Q$ where Q denotes output. Let fixed cost be given by 30. At what output is average total cost minimized?

(a) $\sqrt{40}$

(b) $\sqrt{30}$

(c) $\sqrt{20}$

(d) $\sqrt{10}$

4. To derive gross domestic saving, you have to

(a) subtract C and G from GDP

(b) subtract C and G from NDP

(c) subtract C and G from National Income

(d) subtract C and G from the sum of NNP and net foreign transfers received

5. Suppose that the production function of a firm is $Q = Min\{K + sL, L + sK\}$ where $0 < s < 1$ and L and K respectively denote the amount of labour and capital. If w and r respectively denote wage and rental rates with $s < \frac{w}{r} < \frac{1}{s}$, then which of the following is true

(a) Marginal cost is independent of the value of s.
(b) Marginal cost is increasing in s.
(c) Marginal cost is decreasing in s.
(d) None of these.

6. Suppose two firms are competing in terms of quantity in the market. The market demand function is $P = 9 - Q$ where $Q = q_1 + q_2$. Moreover, the total cost of production is fixed at $f \geq 0$ and it is not sunk cost type. If $9 \geq f \geq \frac{81}{16}$ then

(a) There exists unique Cournot Nash equilibrium;
(b) There are two Cournot Nash equilibria.
(c) There are three Cournot Nash equilibria.
(d) There does not exist any Cournot-Nash equilibrium.

7. Suppose in an economy there are two individuals, viz. Individual A and Individual B and there are two goods, viz. good 1 and good 2. Let x_{ij} denotes consumption of good i by individual j where $i = 1,2$ and $j = A,B$. Both the individuals have same endowment vector (a,a). The utility function of individual j is $u_j(x_{1j}, x_{2j}) = x_{1j} + x_{2j}$ for all $j = A,B$. What is the contract curve of the economy?

(a) The lower and right boundary of the Edgeworth Box.
(b) The upper and left boundary of the Edgeworth Box.
(c) The entire Edgeworth Box.
(d) The contract curve does not exist

8. Suppose the utility function of a worker is $u(Y,L) = 2\sqrt{Y} + L$ where Y is the daily income that the consumer earns and L denotes the total amount of leisure hours that the consumer enjoys. The wage elasticity of the labour supply in this case is

(a) More than unity;
(b) Less than unity;
(c) Equal to unity;
(d) None of these.

9. Assume fifty firms supply commodity Q at location I and fifty at location II. The cost of producing output q_i for the i^{th} firm (in either location) is $\frac{1}{2}q_i^2$. The cost of transporting the commodity to the market from location I is 6 per unit of output and from location II is 10 per unit of output. If the market demand function is given by $D(p) = 400 - 20p$ where p is the market price, then the equilibrium price is

(a) $p = 6$
(b) $p = 10$
(c) $p = 7.5$
(d) $p = 12.5$

10. Suppose two firms are competing in terms of price in the market. Let p_i be the price that Firm i charges. The market demand function that Firm i faces is

$$D_i(p_i, p_j) = \begin{cases} 10 - p_i \; \forall \; p_i < p_j \\ 10 - p_i/2 \; \forall \; p_i = p_j \\ 0 \; \forall \; p_i > p_j \end{cases}$$

where $p_i, p_j \epsilon \{0,1, \ldots, 10\}$. The cost of production of Firm i is $C_i(q_i) = q_i$. The equilibrium prices are

(a) $p_1 = 2 \; and \; p_2 = 2$;
(b) $p_1 = 1 \; and \; p_2 = 1$;
(c) Both $p_1 = 2 \; and \; p_2 = 2$ & $p_1 = 1 \; and \; p_2 = 1$.
(d) None of these.

11. A necessity is a normal good with an income elasticity of demand less than 1 whereas a luxury is a normal good with an income elasticity of demand greater than one. If a person buys N goods which one of these statements could be true?
(a) All goods are luxuries
(b) All goods are necessities
(c) Some goods are necessities whereas the others are luxuries
(d) All goods are characterized by a negative income elasticity of demand.

12. What can you say of the gap between the average total cost curve and the average variable cost curve?
(a) It increases as output increases
(b) It decreases as output increases
(c) It decreases initially and then increases as output increases
(d) It increases initially and then decreases as output increases

13. Consider a perfectly competitive firm faced with a price in the short run which is below the minimum level of average variable cost. What is true about the firm?
(a) It will shut down

(b) It will produce a positive amount of output but we cannot predict the exact level of output.
(c) Whether it produces positive or zero output will depend on factors which have not been mentioned above
(d) It will produce an output of exactly 100 units

14. Let us consider a price-quantity combination on a demand curve associated with a price elasticity of demand of 1.5. What is the sign of the derivative of total revenue with respect to price?
(a) It is positive
(b) It is negative
(c) It is zero
(d) We do not have adequate information

15. Consider the Simple Keynesian Model for an open economy. Suppose the exchange rate is flexible and there are no cross border capital flows. In such a scenario,

(a) the value of the investment multiplier is the same as that in a closed economy

(b) the value of the investment multiplier is larger than that in a closed economy

(c) the value of the investment multiplier is less than that in a closed economy

(d) the value of the investment multiplier is incomparable to that in a closed economy

16. Consider the Simple Keynesian Model of a closed economy without government, where aggregate planned real investment is autonomous and the people are divided into two classes: the workers and the capitalists. Suppose one-fourth of the GDP accrues to the workers and the rest to the capitalists. The marginal propensity to consume of the capitalists is one-fifth, while the marginal propensity to consume of the workers is 0.9. Aggregate planned real investment demand is autonomous. Following an autonomous increase in the autonomous level of real investment by 10 units, the real GDP will go up by

(a) 16 units

(b) 32 units

(c) 42 units

(d) 30 units

17. When marginal propensity to consume is denoted by c and the income interest sensitivity of money demand by l, following a given increase in money supply by $d\bar{M}$ in the IS-LM Model,

(a) the IS curve shifts to the left by $\frac{d\bar{M}}{1-c}$

(b) the LM curve shifts downward by $\frac{d\bar{M}}{l}$

(c) the IS curve shifts to the right $\frac{d\bar{M}}{1-l}$

(d) the LM curve shifts to the right by $\frac{d\bar{M}}{1-c}$

18. "If the fiscal deficit of an economy be 3% of GDP and if the current account deficit also be 3% of GDP in a particular year for that economy, then its aggregate saving must be equal to aggregate investment". The above statement is

(a) True

(b) False

(c) Not necessarily true

(d) Not necessarily false

19. Suppose the difference between the transactions velocity and the income velocity of circulation of money in an economy is 5 and the money value of total transactions is 6 times the money value of aggregate income. If the quantity of money in circulation is 1000 currency units, then the money value of aggregate income in currency units is

a) 1000

(b) 1200

(c) 1500

(d) 1800

20. The relationship between the stock of money and the stock of high powered money is

(a) Determined solely by the reserve deposit ratio

(b) Determined solely by the currency–deposit ratio

(c) Between zero and one

(d) The money multiplier

21. $f(x)=x^6+10$ attains
    (a) a local maximum value 10
    (b) A local minimum value 10
    (c) A global maximum value 10
    (d) A global minimum value 10

22. $\forall x\in(0,\infty)$ the $f(x)=x^{\beta}$ is strictly convex for
    a. $\beta\in(-\infty,0)$
    b. $\beta\in(1,\infty)$
    c. $\beta\in(-\infty,0)\cup(1,\infty)$
    d. $\beta\in(-\infty,o\,]\cup[1,\infty)$

23. The function f(x)=x^3, $x\epsilon(-1,6)$has
    a. A minimum at x=-1
    b. A maximum at x=6
    c. A maximum at x=6 and a minimum at x=-1
    d. Neither a maximum nor a minimum

24. f(x)=$-x^2-y^2$ attains a
    a. Absolute/ global maximum at (x,y)=(0,0)
    b. Relative/ local maximum at (x,y)=(0,0)
    c. Relative/ local minimum at (x,y)= (0,0)
    d. Absolute/ global minimum at (x,y)=(0,0)

25. The function f(x) =$\frac{1}{x}+1$ is bijective over the domain & range
    a. $R^+\rightarrow$R
    b. R/{0}$\rightarrow$R
    c. R/{0}$\rightarrow$R/{1}
    d. R$\rightarrow$R/{1}

26. The f(x,y) =x^2+4y^2, when optimized subject to the constraint $x^2+y^2=1$ attains
    a. A local minimum at (0,1)
    b. A local maximum at (0, -1)
    c. A local maximum at (-1,0)
    d. A local maximum at (1,0)

27. Given the input output model
[aij][xi]+[di]=[xi],
Where, a_{11}=0.2, a_{12}=0.3, a_{13}=0.4, a_{21}=0.5, a_{22}= 0.2, a_{23}=0.1, a_{31}=0.2, a_{32}=0.4, a_{33}=0.3
and *di* are all non-negative, solution for X will be all
(a) Equal to zero
(b) Greater than zero
(c) Less than zero
(d) Non-negative

28. For a National Income determination model
Y=C+I+G
C=a+kY
I=b-hY
G=f+gY
the value of the partial derivatives of equilibrium Y with respect to f is
(a) k+g-h
(b) –(k+g-h)
(c) 1/(k+g-h)
(d) 1/(1-k+h-g)

29. For a differential equation
$2Y_{t+2}+Y_{t+1}+3Y_t=3t$
the roots of the equation will be
(a) Real and distinct
(b) Real and equal
(c) Complex and conjugate
(d) Cannot be determined

30. The complementary function for the differential equation given as
$Y''+4Y'+Y=3t$
will be
(a) $A_1e^{2t}+A_2e^{t}$
(b) $A_1e^{2t}+A_2e^{2t}$
(c) $A_1e^{-2t}+A_2e^{-2t}$
(d) $A_1e^{-2t}+A_2te^{-2t}$

31. For the set of equations
$Q^d=k-lP, \quad (k,l>0);$
$Q^s=-g+hP, \quad (g,h>0)$
$P'=j(Q^d-Q^s), \quad (j>0),$
the time path for price will be
(a) Stable
(b) Unstable
(c) Stability depend upon some condition other than given ones
(d) Stability cannot be determined in any case

32. The non-linear differential equation
$Y'+f(t)Y=g(t)Y^m$
(a) Can always be reduced into linear form
(b) Cannot be reduced into linear form
(c) Whether can be reduced or not depend upon the value of m
(d) Nothing can be said about the reduction in linear form

33. An increase in G in the IS-LM model fully crowds out private investment in the IS-LM model, when

(a) interest sensitivity of investment is nil

(b) interest sensitivity of money demand is nil

(c) income sensitivity of money demand is nil

(d) income sensitivity of investment is nil

34. When the central bank adjusts money supply so that the interest rate remains at a target level,

the equilibrium value of Y in the Complete Keynesian Model

(a) is independent of the price level

(b) is an increasing function of the price level

(c) is a decreasing function of the price level

(d) is a decreasing function of the interest rate

35. When money demand is income insensitive,

(a) the monetary policy is fully ineffective

(b) the investment multiplier is zero

(c) the fiscal policy is fully effective

(d) the fiscal policy is partially effective

36. In the Simple Keynesian Model for a closed economy without government, where aggregate planned real investment demand is autonomous, following a given increase in the undistributed corporate profit,

(a) the personal saving will increase

(b) the equilibrium real GDP will increase

(c) the equilibrium real GDP will remain unchanged

(d) the equilibrium real GDP will fall

37. In the long run, the steady state rate of growth of a capitalist economy

(a) Falls with the savings propensity.

(b) Rises with the incremental capital output ratio.

(c) Rises with the savings propensity but falls with the incremental capital output ratio.

(d) Falls with the savings propensity but rises with the incremental capital output ratio.

38. In a multiple choice test there are 8 questions. Each question has 4 alternatives of which only one is correct. If a candidate answers all the questions by choosing one alternative for each, then the probability of doing exactly 4 answers correctly is

(a) 0.5
(b) 0.0865
(c) 0.25
(d) None of the above

39. Which of the statements is true?
If we decrease probability of type I error

(a) Probability of type II error remains same.
(b) Probability of type II error also decreases
(c) Probability of Type II error increases
(d) We cannot say anything about probability of type II error

40. X_1, X_2, X_3 are independent Normal variables with mean 3, 8, -1 and variances 4, 9, 1 respectively. If $Y = 2X_1 - X_2 + X_3$, what distribution does Y follow?

(a) Y follows Normal distribution with mean -3 and variance 26
(b) Y follows Normal distribution with mean 10 and variance 14
(c) Y follows Normal distribution with mean -3 and variance 0
(d) Y follows Chi square distribution with mean -3 and variance 26

41. The mean monthly salary paid to all employees in a certain factory is Rs 5000. The mean monthly salary paid to male and female employees are Rs 5200 and Rs 4200 respectively. What is the percentage of female employees in the factory?

(a) 30%
(b) 40%
(c) 60%
(d) None of the above

42. The first three moments of a distribution about the value 3 of a variable are 2, 10 and 30 respectively. What is variance of the distribution?

(a) 31
(b) 6
(c) 12
(d) None of the above

43. Two groups of 15 and 22 values have variances 9 and 16 respectively. If the group means differ by 8.2, then find the standard deviation of the combined group of values.

(a) 29.37
(b) 5.42
(c) 12
(d) None of the above

44. Choose the correct answer:

In a two variable classical linear regression model, an increase in residual sum of square

(a) will increase the variance of the slope parameter of the model.
(b) Will reduce the variance of the slope parameter of the model.
(c) Will keep variance of the slope parameter of the model unchanged.
(d) will increase the estimated value of the intercept term

45. Choose the correct answer:

In a two variable classical linear regression model with hetroscedastic disturbances,

(a) the disturbance terms are correlated over time.
(b) The variance of the disturbance terms are not equal.
(c) the disturbance terms are equal.
(d) None of the above.

46. In a two variable classical linear regression model, an increase in the number of observations,

(a) will increase the value of unbiased estimator of the variance of the disturbance term.
(b) will reduce the value of unbiased estimator of the variance of the disturbance term.
(c) will keep the value of unbiased estimator of the variance of the disturbance term unchanged,
(d) will increase the value of slope parameter.

47. Choose the correct answer:

In a two variable classical linear regression model if there is the problem of multicollinearity , then

(a) the disturbance terms of the model are correlated with each other
(b) the explanatory variables are correlated with each other
(c) The explanatory variables are correlated with error terms
(d) None of the above

48. In a classical linear regression model an increase in "Explained Sum of Square (ESS)"

(a) Will increase goodness of fit of the model.
(b) Will reduce goodness of fit of the model.
(c) Will keep goodness of fit of the model unchanged.
(d) None of the above

49. Choose the correct answer:

In a two variable classical linear regression model, an increase in the residual sum of square

(a) will increase the estimated value of the unbiased estimator of the variance of the disturbance term.

(b) Will reduce the estimated value of the unbiased estimator of the variance of the disturbance term .

(c) Will not affect the estimated value of the unbiased estimator of the variance of the disturbance term .

(d) Will increase the estimated value of the slope parameter.

50. For a two variable regression model consisting of the dependent variable Y and explanatory variable X,

(a) the regression line will not pass through the mean value of Y and X.

(b) The regression line will pass through the mean value of Y and X.

(c) The estimated value of the slope parameter of the model does not depend on the mean value of Y and X.

(d) None of the above.